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7-1-1998

The Digital Reference World of Academic Librarians.

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The Digital Reference of World

Abstract:
Survey results indicate that academic library reference departments are increasingly providing electronic tools. In 1997, over 73% of surveyed libraries had over 100 public-use terminals or workstations available, up from about 59% in 1994. One library reported having about 500 terminals providing access to about 120 databases. A large growth area, in the 1994-1997 period, was in providing Internet access to end users.

Full Text:
Print is not yet obsolete--it is still the most visible part of nearly every academic library's collection. But, throughout the 1990s, the reference departments of academic libraries have seen a rapid evolution from a print-centered world to a digital-intensive one. Bookshelves that for years held print volumes of abstracting and indexing publications are being replaced by faster workstations. Online, CD-ROM, and World Wide Web resources are often the first choice of both library users and reference librarians. Complex mixtures of local area networks, wide area networks, the Internet, and intranets are making information resources available to the academic user community in campus libraries and in their offices, dormitories, and homes.

By now, many reference librarians expect constant change and have become adept at juggling a vast array of print and online resources. We have tracked these changes by surveying reference librarians at academic research libraries in the United States and Canada three times this decade, in 1991, 1994, and 1997, [1,2,3]. For this latest measure of how academic libraries incorporate electronic information sources into their reference activities and the effect on library services, a questionnaire was sent to all academic members of the Association of Research Libraries in the fourth quarter of 1997.

RESEARCH LIBRARIES

The Association of Research Libraries (ARL) includes 110 academic library members in the United States and Canada. Of these, 68 libraries responded to our survey (for a response rate of 62%). ARL academic members are primarily large universities that offer bachelor, master, and doctoral degrees in a variety of subjects. They typically have many academic departments and more than one library on campus. Of the libraries that responded to our survey, none had only one library, 71% (48 universities) had between two and ten libraries, and the rest had 11 or more.

Over 91% of the respondents are in universities with 10,000 or more full-time students. These are big universities with obligations to support research and needs for a strong library system. Compared to other types of libraries, ARL libraries have large budgets and a commitment to innovation, but we suspect that few have seen actual increases in buying power in this decade and some have suffered budget reductions.

OPTIONS: 1991-1997

In 1994, approximately 59% of the ARL libraries had more than 100 workstations or terminals available for public use in all main and branch libraries on their campus. In the 1997 survey, over 73% report more than 100 workstations or terminals (Figure 1). An additional 18% reported between 41 and 100 workstations or terminals. One library added that it "has about 120 databases networked to about 500 public terminals on campus." Another reported an increase of "about 400%--from ten public workstations to more than 40. Beginning in the spring (1998) semester, there will be more than 200 public service workstations located in the library."

Increasingly, these are higher-end computers and client-server workstations, instead of dumb terminals connected to a mainframe. (One librarian volunteered that they are "not typical" because they have "lots of dumb terminals and no printers ... We need to upgrade but lack the funds.")

Library workstations are connecting users to a wide range of electronic options. As seen in Figure 2, libraries are continuing to offer

access to the options reported in earlier surveys, including online through an intermediary, end-user online, CD-ROM, locally-loaded databases or those accessible through the library catalog, and Internet.

Not surprisingly, the big growth area between 1994 and 1997 is in end-user access to the World Wide Web. All but two of the libraries in the 1997 survey support patron access to the Web, and many commented that they answer an increasing number of reference questions through Web resources. We also asked specific questions about each option.

INTERMEDIARY ONLINE

Intermediary search services are not dead in academic research libraries, but they are dwindling in numbers, and most services are experiencing sharp declines in the number of searches performed. A library that once had a thriving mediated search service reports, "we do far fewer online searches" (now only 30 per year). This is a continuation of a trend that was well under way in the earlier surveys.

Although mediated search services are used less often, they will remain in the university libraries that already offer them. When asked, "In the next two years do you anticipate deleting any of the services you now have?," no library reported that it planned to completely eliminate intermediary search services (although one library said "possibly").

Of the 59 libraries that report offering intermediary online services (87%), the familiar online systems are still the most frequently used. Figure 3 shows, in descending order, the online services used for mediated searching in the 1991, 1994, and 1997 surveys.

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FIGURE 3 Use of Mediated Online Services in ARL Libraries 1997 1994 1991 Dialog 94.9% 98.9% 95.80% BRS/OVID(*) 13.6%
78.1% 92.70% STN 38.9% 58.3% 59.3% EPIC 18.6% 57.3% 57.3% NLM 13.6% 52.1% 55.2% LEXIS-NEXIS 23.7% 50.0% 42.7% Dow Jones
20.3% 38.5% 37.5% WESTLAW 5.1% 30.2% 28.1% Wilsonline 0% 28.1% 65.6% ORBIT 3.4% 26.0% 28.1% DataStar 6.8% 18.8% 0%
NewsNet(**) - 4.2% - VU/TEXT(**) - - 42.7% Other 13.6% 19.8% -
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(*) OVID purchased BRS.

(**) NewsNet and VU/TEXT are no longer in business.

Dialog remains the online system offered by nearly all universities (95%), but, for the first time, there is no clear-cut second place service. Many former BRS users did not make the switch to OVID when OVID purchased the BRS search service, and now only 13.6% of the libraries use OVID. STN International popularity has remained fairly constant, probably because many of the universities are research-oriented and have active chemistry or engineering departments.

Most intermediary search services in academic research libraries continue to charge fees. Fifty-four libraries (almost 92% of those that offer intermediary searching) charge all or some of their users for their searches. The charge may be simple billing back of direct online search charges or may be based on a more complex formula that takes into account overhead and librarian's time.

END-USER ONLINE

End-user online searching on commercial search services continues to grow in popularity, beyond the rates predicted at the beginning of' this decade--primarily due to OCLC's FirstSearch service. In the last three years FirstSearch remained popular, but new end-user services for the library market also provide competition for OCLC (Figure 4.) Silver-Platter ERL, Information Access Company (IAC) SearchBank, UMI ProQuest Direct, and EBSCO host are all new services since the 1994 survey. The popularity of all of these services in academic libraries shows clearly that the time for commercial end-user services through the library is here. Nearly 72% of libraries surveyed offer the Web versions of at least one of these commercial end-user services.

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FIGURE 4 End-User Online Services in ARL Libraries 1997 1994 1991 OCLC FirstSearch 84.2% 35.4% - LEXIS-NEXIS 64.9% 34.4%
18.8% BRS/AfterDark(*) - 19.8% 22.9% STN 7.0% 19.8% 13.5% NLM 10.5% 19.8% 0% Dow Jones 29.8% 18.6% 11.5% WESTLAW 10.5%
13.5% 8.3% Knowledge Index(*) - 11.5% 21.9% 1AC SearchBank(**) 38.6% - - UMI ProQuest Direct(**) 33.3% - - EBSCOhost(**)
15.8% - - SilverPlatter ERL(**) 43.9% - -
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(*) No longer available

(**) New since 1994 survey

Another change in end-user online use is that none of the libraries that responded to our 1997 questionnaire charge patrons for end-user searching, while in 1991 over half of the libraries did charge. There are probably several reasons for this major change. One is that in 1991 most services had only transactional-based pricing, now many offer subscription options. Subscription pricing usually allows unlimited searching at a fixed price, so libraries can publicize and encourage use. For services with transactional options (such as per-search charges), the prices are considerably lower now than a few years ago. The elimination of fees probably also reflects a change in attitude. End-user online services are now seen as a mainstream offering and money from cuts in print subscriptions is being diverted to end-user online services. End-users are doing more searching and paying less.

CD-ROM

Despite dire predictions, CD-ROM continues (for now) to be a popular option in libraries. All but one of the libraries surveyed offer databases on CD-ROM, and most continue to have a major investment in the medium. Fifty seven percent of the libraries (38) offer more than 100 titles on CD-ROM, while 95% of the libraries have 20 or more titles.

Networking CD-ROMs is now common-place, and 90% of the libraries (60) provide CD-ROMs through local area networks, compared to 75% in 1994, and only 38% in 1991. Dial-up access to CD-ROM databases is not as common, but is now offered by 45%, up from 22% in 1994 and only 6% in 1991.

Most libraries also still have some standalone CD-ROM titles (96% of libraries) in addition to the networked titles. Standalone access is offered for those titles that have restrictive licensing agreements or for titles that are less frequently used.

LOCALLY-LOADED TAPES

Local loading of databases has become the most complex option in the years between these surveys. We found it necessary to differentiate between "reference databases loaded locally on a computer on your campus," and "reference databases loaded on another library's computer (such as a consortium)." Nearly 81% of the libraries load databases locally and over 69% provide access to databases loaded by another library or consortium.

Libraries that load databases locally are loading many different titles. Over 45% load more than 25 database titles, while less than 11% load fewer than five databases. Fewer databases are typically accessed through a consortium. Of libraries that provide this option, 43% offer access to not more than five consortium-loaded databases. However, the numbers are spread, since an additional 28% offer more than 25 databases loaded on consortia. In both cases they are mostly bibliographic or full-text, but directory and other types of databases are supported as well. Several libraries mentioned that they will seek more consortium opportunities.

INTERNET/WORLD WIDE WEB

No one working in any type of library today will be surprised that nearly all academic research libraries now offer patron access to the Web. The impact on reference librarians, libraries, and library users cannot be underestimated. In 1994, 77% of the libraries offered some kind of Internet patron access, including the Web, gophers, listservs, etc. In three short years almost all have embraced the Web.

One major impact is reflected in the growth of the number and type of workstations in these libraries. We suspected that Internet access might also affect library instruction, so we asked what type of Internet training was offered to on-site users and what type to remote users. All but two of the libraries reported they offer Internet training to on-site users. Figure 5 shows that these libraries have developed a variety of training methods. Internet training for remote users is less common, but over half (52%) offer some sort of training assistance for these virtual patrons.

The Demise of Print?

Even though libraries continue to offer these and more options, the extent of use of the various formats is changing. Print still predominates, but perhaps not for long in university reference departments. The trend to phase out some print resources was reported in our earlier surveys and is accelerating. Budgets are being redirected from print to electronic resources and according to one librarian, "print is much less important than it was."

Indexes and abstracts are more popular in digital form, and one respondent answered:

Rare is the question that does not

involve the computer in some way,

even if only in using a very sophisticated

feature of our [online

catalog] such as limiting a search

by publisher to find a specific

edition of a Shakespearean play. It

seems that our print indexes are

the most ignored items in the

library these days, and if we see

somebody sitting by the printed

Psyc Abs, we ask them. if we can

save them a whole lot of work.

While we don't keep statistics on

how many questions are answered

with print sources versus electronic

ones, there is a definite perception

that we are rapidly increasing our

time with students on the PCs.

Print is still regularly used for certain types of reference materials. One librarian explains the distinction in this way:

Although we use subject encyclopedias,

print directories, and

other basic factual sources [in

print], we rarely touch print

indexes any longer. Even if we get

patrons over to the print index

section, it is clear they are not

interested unless they are doing'

historical retrospective searching.

Print journal collections will be the next to go. Even electronic indexes and abstracts point users to complete items, many of which are still in print. Journal collections are also gravitating to digital formats due to users' desires and libraries attempts to redirect budgets. Many respondents commented on the accelerating demand for linked digital full text after the search of an online or CD-ROM bibliographic source. Patrons expect full text. As one librarian told us, "Patrons now seem surprised if a source is not full text. They keep asking what button to push in PsycInfo to get the full text."

Online searching of bibliographic databases makes finding information easier and more compelling for students and faculty, but they want full articles delivered quickly.

Whether it is through linked full text, full-text databases, or immediate document delivery services, librarians must find ways to provide digital full text to users.

This reliance on instant access to digitized texts can have a downside in academia if adequate collections for research are not provided. One librarian warned, "Full-text databases cut short research efforts. Students are easily satisfied with material they find in IAC or ABI/INFORM because it often is full-text." Students will choose a full-text resource or rely on articles available in full text over other more appropriate print sources or articles. The popularity of anything in full text reminds one librarian "of the reluctance to use hardcopy indexes and abstracts once electronic files were available."

Remote Online Gains Ground

A trend that could not be predicted from the 1991 survey is the beginning of a move away from CD-ROM LANs and local loading of databases. Today, libraries still have many databases available in both of these "local" modes--and they have a large investment in the infrastructure to support them. But the trend is to replace CD-ROM and locally-loaded databases with remote online resources, either through traditional online services or the Web. One library after another reports the same trend:

* We had H. W. Wilson databases and ERIC locally mounted on our NOTIS OPAC system. They were removed when we switched to Web-based versions of ERIC and the Wilson databases.

* We plan to stop loading databases on our OPAC. We plan to move databases from CD-ROM LAN to a local SilverPlatter ERL server, OCLC FirstSearch, or other vendors' client-servers.

* [We plan to add] more Web-based resources and more resources that are networked and available remotely.

* We are pushing very hard to make our indexes available as Web files--much less problematic technically than CDs.

* In general, the library/information technology world seems to be in a transition from local electronic resources (whether tape loaded or CD-ROMs) to Web access to resources. I anticipate less growth in the CD-ROM LAN than over the last few years and more growth in the number of Web-based resources we license for the campus.

* We are slowly moving away from locally-mounted and CD-ROM databases to online/WWW access. We are evolving from making resources available only through a CD-ROM-based LAN, whose offerings were not available to users at home or in the office, to a Web-based environment, which allows us to make a huge portion of our resources available to remote users.

CD-ROM and locally-loaded databases may not yet be dead, but they are at the beginning stages of failing to thrive. These are the only two options that were mentioned more than once when we asked, "what services do you anticipate deleting in the next two years." The trend toward remote access and away from locally-held resources has several motivations. One is the ease of passing on to another organization--whether it is a commercial database service, a consortium, or a Web server--the burden of loading and maintaining databases. What the accessing library gives up in control is often made up in lower hardware requirements, ease on systems staff, costs, and hassle.

Another factor is the limitations of local databases. Patrons want full text of everything, and CD-ROM and local databases are limited in the amount of material they can provide easily. Connecting to UMI's computer, for example, to get to its ProQuest Direct full text seems much more desirable these days than housing and maintaining hundreds of full-text CD-ROMs. Online full-text sources usually offer more, including the choice of plain ASCII text, image files, or encoded files (HTML or SGML) for the same article.

CONCLUSIONS

Change is a constant in academic libraries. Each time a new electronic option appeared in the 1990s, university reference libraries embraced it, almost always with enthusiasm. As we move into the next decade, a trend seems to be emerging. Print collections will be the medium of choice for locally-held reference materials that remain, digital services will increasingly focus on connecting to information housed elsewhere.

But this trend, like all others in libraries in this decade, does not mean that libraries will give up completely on any one medium or electronic option. Though the relative emphasis will change, print, networked CD-ROMs, standalone CD-ROMs, locally-loaded databases, consortium-loaded databases, intermediary online services, end-user online services, and the World Wide Web will all continue to coexist in university libraries. Librarians know that each medium has its role in today's library. This confusing array of options changes the look of academic reference departments as they focus on a digital reference world.

REFERENCES

[1] Tenopir, Carol and Ralf Neufang. "Electronic Reference Options: How They Stack Up in Research Libraries." ONLINE 16 (March 1992): pp. 22-28.

[2] Tenopir, Carol and Ralf Neufang. "The Impact of Electronic Reference on Reference Librarians." ONLINE 16 (May 1992): pp. 54-60.

[3] Tenopir, Carol and Ralf Neufang. "Electronic Reference Options: Tracking the Changes." ONLINE 19 (July/August 1995): pp. 67-73.

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Please note: Some tables or figures were omitted from this article.